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TECH CENTER 1600/2900

(1) GENERAL INFORMATION:

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                     Spencer, David M.
                     Wandless, Thomas J.
                     Belshaw, Peter

    (ii) TITLE OF INVENTION: REGULATED TRANSCRIPTION OF TARGETED GENES AND
                                  OTHER BIOLOGICAL EVENTS

   (iii) NUMBER OF SEQUENCES: 81

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    (vi) CURRENT APPLICATION DATA:
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(2) INFORMATION .. SEQ ID NO:1:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 14 amino acids
        (B) TYPE: amino acid
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

Met Gly Ser Ser Lys Ser Lys Pro Lys Asp Pro Ser Gln Arg
 1   5   10

(2) INFORMATION FOR SEQ ID NO:2:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 11 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: cDNA

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

GTTAAGTTAA C   11

(2) INFORMATION FOR SEQ ID NO:3:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 11 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: cDNA

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

TGACTCAGCG C   11

(2) INFORMATION FOR SEQ ID NO:4:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 33 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(ii) MOLECU███.PE: cDNA

        (ix) FEATURE:
              (A) NAME/KEY: misc_feature
              (B) LOCATION: 6..11
              (D) OTHER INFORMATION: /note= "Sac II restriction site."

        (ix) FEATURE:
              (A) NAME/KEY: misc_signal
              (B) LOCATION: 12..16
              (D) OTHER INFORMATION: /note= "Kozak sequence."

        (ix) FEATURE:
              (A) NAME/KEY: CDS
              (B) LOCATION: 17..31

        (ix) FEATURE:
              (A) NAME/KEY: misc_feature
              (B) LOCATION: 17..33
              (D) OTHER INFORMATION: /note= "Region of homology with
                   target sequence."

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

CGACACCGCG GCCACC ATG GCC ACA ATT GGA GC   33
                  Met Ala Thr Ile Gly
                  1   5

(2) INFORMATION FOR SEQ ID NO:5:

        (i)   SEQUENCE CHARACTERISTICS:
              (A) LENGTH: 5 amino acids
              (B) TYPE: amino acid
              (D) TOPOLOGY: linear

        (ii) MOLECULE TYPE: protein

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

Met Ala Thr Ile Gly
1   5

(2) INFORMATION FOR SEQ ID NO:6:

        (i)   SEQUENCE CHARACTERISTICS:
              (A) LENGTH: 27 base pairs
              (B) TYPE: nucleic acid
              (C) STRANDEDNESS: single
              (D) TOPOLOGY: linear

        (ii) MOLECULE TYPE: cDNA

(ix) FEATUR
              (A) NAME/KEY: misc_feature
              (B) LOCATION: 6..11
              (D) OTHER INFORMATION: /note= "Xho I restriction site."

         (ix) FEATURE:
              (A) NAME/KEY: misc_feature
              (B) LOCATION: 12..27
              (D) OTHER INFORMATION: /note= "Region of homology with
                                           target sequence."

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

CGACACTCGA GAGCCCATGA CTTCTGG   27

(2) INFORMATION FOR SEQ ID NO:7:

         (i) SEQUENCE CHARACTERISTICS:
             (A) LENGTH: 4 amino acids
             (B) TYPE: amino acid
             (C) STRANDEDNESS: single
             (D) TOPOLOGY: linear

        (ii) MOLECULE TYPE: peptide

        (ix) FEATURE:
             (A) NAME/KEY: Peptide
             (B) LOCATION: 1..4
             (D) OTHER INFORMATION: /note= "Translation product of
                 complement of SEQ ID NO:6, bases 9 to 20."

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

Ser Trp Ala Leu
 1

(2) INFORMATION FOR SEQ ID NO:8:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 41 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear

       (ii) MOLECULE TYPE: cDNA

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION: 6..11

(D) OTHER INFORMATION: /note= "Xho   striction site."

        (ix) FEATURE:
                (A) NAME/KEY: misc_feature
                (B) LOCATION: 12..41
                (D) OTHER INFORMATION: /note= "Region of homology with
                    target sequence."

        (ix) FEATURE:
                (A) NAME/KEY: CDS
                (B) LOCATION: 9..41

        (ix) FEATURE:
                (A) NAME/KEY: misc_feature
                (B) LOCATION: 28
                (D) OTHER INFORMATION: /note= "A to G."

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

CGACACTC GAG CTC TGC TAC TTG CTA GGT GGA ATC CTC TTC   41
        Glu Leu Cys Tyr Leu Leu Gly Gly Ile Leu Phe
        1   5   10

(2) INFORMATION FOR SEQ ID NO:9:

        (i) SEQUENCE CHARACTERISTICS:
                (A) LENGTH: 11 amino acids
                (B) TYPE: amino acid
                (D) TOPOLOGY: linear

        (ii) MOLECULE TYPE: protein

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

Glu Leu Cys Tyr Leu Leu Gly Gly Ile Leu Phe
1   5   10

(2) INFORMATION FOR SEQ ID NO:10:

        (i) SEQUENCE CHARACTERISTICS:
                (A) LENGTH: 24 base pairs
                (B) TYPE: nucleic acid
                (C) STRANDEDNESS: single
                (D) TOPOLOGY: linear

        (ii) MOLECULE TYPE: cDNA

        (ix) FEATURE:
                (A) NAME/KEY: misc_feature
                (B) LOCATION: 3..8
                (D) OTHER INFORMATION: /note= "Eco RI restriction site."

(ix) FEATURE:
                (A) NAME/KEY: misc_feature
                (B) LOCATION: 9..24
                (D) OTHER INFORMATION: /note= "Region of homology with
                                        target sequence."

          (ix) FEATURE:
                (A) NAME/KEY: misc_feature
                (B) LOCATION: 24
                (D) OTHER INFORMATION: /note= "G to C."

          (ix) FEATURE:
                (A) NAME/KEY: misc_signal
                (B) LOCATION: complement (9..11)
                (D) OTHER INFORMATION: /note= "Translational stop encoded
          in complementary strand."

          (xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

GCGAATTCTT AGCGAGGGGC CAGC

(2) INFORMATION FOR SEQ ID NO:11:

          (i) SEQUENCE CHARACTERISTICS:
                (A) LENGTH: 4 amino acids
                (B) TYPE: amino acid
                (C) STRANDEDNESS: single
                (D) TOPOLOGY: linear

          (ii) MOLECULE TYPE: peptide

          (ix) FEATURE:
                (A) NAME/KEY: Peptide
                (B) LOCATION: 1..4
                (D) OTHER INFORMATION: /note= "Translational product of
          complement to SEQ ID NO:10, bases 12 to 23."

          (xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

Leu Ala Pro Arg
 1

(2) INFORMATION FOR SEQ ID NO:12:

          (i) SEQUENCE CHARACTERISTICS:
                (A) LENGTH: 33 base pairs
                (B) TYPE: nucleic acid
                (C) STRANDEDNESS: single
                (D) TOPOLOGY: linear

          (ii) MOLECULE TYPE: cDNA

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      (ix) FEATURE
           (A) NAME/KEY: misc_feature
           (B) LOCATION: 3..8
           (D) OTHER INFORMATION: /note= "Eco RI restriction."

      (ix) FEATURE:
           (A) NAME/KEY: misc_feature
           (B) LOCATION: 12..17
           (D) OTHER INFORMATION: /note= "Sal I restriction site."

      (ix) FEATURE:
           (A) NAME/KEY: misc_signal
           (B) LOCATION: complement (9..11)
           (D) OTHER INFORMATION: /note= "Translational stop signal
      encoded on complementary strand."

      (ix) FEATURE:
           (A) NAME/KEY: misc_feature
           (B) LOCATION: 18..33
           (D) OTHER INFORMATION: /note= "Region of homology with
  target sequence."


      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

GCGAATTCTT AGTCGACGCG AGGGGCCAGG GTC                                    33

(2) INFORMATION FOR SEQ ID NO:13:

      (i) SEQUENCE CHARACTERISTICS:
           (A) LENGTH: 4 amino acids
           (B) TYPE: amino acid
           (C) STRANDEDNESS: single
           (D) TOPOLOGY: linear

      (ii) MOLECULE TYPE: peptide


      (ix) FEATURE:
           (A) NAME/KEY: Peptide
           (B) LOCATION: 1..4
           (D) OTHER INFORMATION: /note= "Translational product of
               complement to SEQ ID NO:12, bases 18 to 29."


      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

Leu Ala Pro Arg
 1

(2) INFORMATION FOR SEQ ID NO:14:

      (i) SEQUENCE CHARACTERISTICS:
           (A) LENGTH: 25 base pairs
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(B) TY██ ▪ucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: cDNA

    (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION: 4..9
          (D) OTHER INFORMATION: /note= "Xho I restriction site."

    (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION: 13
          (D) OTHER INFORMATION: /note= "T to G."

    (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION: 4..25
          (D) OTHER INFORMATION: /note= "Region of homology with
              target sequence."

    (ix) FEATURE:
          (A) NAME/KEY: CDS
          (B) LOCATION: 10..24

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

GGGCTCGAG CTC GGC TAC TTG CTA G
          Leu Gly Tyr Leu Leu
           1   5

25

(2) INFORMATION FOR SEQ ID NO:15:

        (i) SEQUENCE CHARACTERISTICS:
             (A) LENGTH: 5 amino acids
             (B) TYPE: amino acid
             (D) TOPOLOGY: linear

       (ii) MOLECULE TYPE: protein

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

Leu Gly Tyr Leu Leu
 1   5

(2) INFORMATION FOR SEQ ID NO:16:

        (i) SEQUENCE CHARACTERISTICS:
             (A) LENGTH: 26 base pairs
             (B) TYPE: nucleic acid

(C) S   N.EDNESS: single
          (D) TOPOLOGY: linear

     (ii) MOLECULE TYPE: cDNA

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION: 6..11
          (D) OTHER INFORMATION: /note= "Xho I restriction site."

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION: 12..26
          (D) OTHER INFORMATION: /note= "Region of homology with
target sequence."

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

CGACACTCGA .GGTGACGGAC AAGGTC   26

(2) INFORMATION FOR SEQ ID NO:17:

     (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 26 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

     (ii) MOLECULE TYPE: cDNA

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION: 6..11
          (D) OTHER INFORMATION: /note= "Sal I restriction site."

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION: 12...26
          (D) OTHER INFORMATION: /note= "Region of homology with
target sequence."

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

CGACAGTCGA CCCAATCAGG GACCTC   26

(2) INFORMATION FOR SEQ ID NO:18:

     (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 33 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single

(D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: cDNA

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION: 1..5
        (D) OTHER INFORMATION: /note= "Xho I restriction site."

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION: 10..15
        (D) OTHER INFORMATION: /note= "Bsi WI restriction site."

   (ix) FEATURE:
        (A) NAME/KEY: CDS
        (B) LOCATION: 6..32

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

TCGAG TAT CCG TAC GAC GTA CCA GAC TAC GCA G   33
      Tyr Pro Tyr Asp Val Pro Asp Tyr Ala
       1   5

(2) INFORMATION FOR SEQ ID NO:19:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 9 amino acids
            (B) TYPE: amino acid
            (D) TOPOLOGY: linear

       (ii) MOLECULE TYPE: protein

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

Tyr Pro Tyr Asp Val Pro Asp Tyr Ala
 1   5

(2) INFORMATION FOR SEQ ID NO:20:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 33 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear

       (ii) MOLECULE TYPE: cDNA

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION: 1..5

(D) OTHER INFORMATION: /note= "Sal I restriction site."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

TCGACTGCGT AGTCTGGTAC GTCGTACGGA TAC

(2) INFORMATION FOR SEQ ID NO:21:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 33 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: cDNA

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION: 1..5
        (D) OTHER INFORMATION: /note= "Sal I restriction site."

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:

TCGACTATCC GTACGACGTA CCAGACTACG CAC

(2) INFORMATION FOR SEQ ID NO:22:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 33 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: cDNA

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION: 1..5
        (D) OTHER INFORMATION: /note= "Xho I restriction site."

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:

TCGAGTGCGT AGTCTGGTAC GTCGTACGGA TAG

(2) INFORMATION FOR SEQ ID NO:23:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 80 base pairs

(B) T██ nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: cDNA

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION: 6..11
        (D) OTHER INFORMATION: /note= "Sac II restriction site."

    (ix) FEATURE:
        (A) NAME/KEY: misc_signal
        (B) LOCATION: 12..16
        (D) OTHER INFORMATION: /note= "Kozak sequence."

    (ix) FEATURE:
        (A) NAME/KEY: misc_signal
        (B) LOCATION: 17..58
        (D) OTHER INFORMATION: /note= "Myristoylation signal."

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION: 59..64
        (D) OTHER INFORMATION: /note= "Xho I restriction site."

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION: 65..80
        (D) OTHER INFORMATION: /note= "Zeta homology."

    (ix) FEATURE:
        (A) NAME/KEY: CDS
        (B) LOCATION: 17..79

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

CGACACCGCG GCCACC ATG GGG AGT AGC AAG AGC AAG CCT AAG GAC CCC   49
                  Met Gly Ser Ser Lys Ser Lys Pro Lys Asp Pro
                   1   5   10

AGC CAG CGC CTC GAG AGG AGT GCA GAG ACT G   80
Ser Gln Arg Leu Glu Arg Ser Ala Glu Thr
          15   20

(2) INFORMATION FOR SEQ ID NO:24:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 21 amino acids
            (B) TYPE: amino acid
            (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

Met Gly Ser Ser Lys Ser Lys Pro Lys Asp Pro Ser Gln Arg Leu Glu
1   5   10   15

Arg Ser Ala Glu Thr
            20

(2) INFORMATION FOR SEQ ID NO:25:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 27 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear

        (ii) MOLECULE TYPE: cDNA

        (ix) FEATURE:
            (A) NAME/KEY: CDS
            (B) LOCATION: 12..26

        (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION: 6..11
            (D) OTHER INFORMATION: /note= "Xho I restriction site."

        (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION: 12..27
            (D) OTHER INFORMATION: /note= "Region of homology with
    target sequence."

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

CGACACTCGA G GAG CTC TGT GAC GAT G   27
            Glu Leu Cys Asp Asp
             1   5

(2) INFORMATION FOR SEQ ID NO:26:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 5 amino acids
            (B) TYPE: amino acid
            (D) TOPOLOGY: linear

        (ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2

Glu Leu Cys Asp Asp
1   5

(2) INFORMATION FOR SEQ ID NO:27:

        (i) SEQUENCE CHARACTERISTICS:
                (A) LENGTH: 41 base pairs
                (B) TYPE: nucleic acid
                (C) STRANDEDNESS: single
                (D) TOPOLOGY: linear

        (ii) MOLECULE TYPE: cDNA

        (ix) FEATURE:
                (A) NAME/KEY: misc_feature
                (B) LOCATION: 6..11
                (D) OTHER INFORMATION: /note= "Xho I restriction site."

        (ix) FEATURE:
                (A) NAME/KEY: misc_feature
                (B) LOCATION: 12..41
                (D) OTHER INFORMATION: /note= "Region of homology with
                                         target sequence."

        (ix) FEATURE:
                (A) NAME/KEY: misc_feature
                (B) LOCATION: 27..29
                (D) OTHER INFORMATION: /note= "GAT to AAG."

        (ix) FEATURE:
                (A) NAME/KEY: CDS
                (B) LOCATION: 9..41

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:

CGACACTC GAG CTC TGC TAC TTG CTA AAG GGA ATC CTC TTC   41
        Glu Leu Cys Tyr Leu Leu Lys Gly Ile Leu Phe
         1   5   10

(2) INFORMATION FOR SEQ ID NO:28:

        (i) SEQUENCE CHARACTERISTICS:
                (A) LENGTH: 11 amino acids
                (B) TYPE: amino acid
                (D) TOPOLOGY: linear

        (ii) MOLECULE TYPE: protein

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

Glu Leu Cys Tyr I● Leu Lys Gly Il Leu Phe
1   5   10

(2) INFORMATION FOR SEQ ID NO:29:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 44 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear

       (ii) MOLECULE TYPE: cDNA

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION: 6..11
            (D) OTHER INFORMATION: /note= "Xho I restriction site."

       (ix) FEATURE:
            (A) NAME/KEY: CDS
            (B) LOCATION: 9..44

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION: 27..44
            (D) OTHER INFORMATION: /note= "Region of homology with target
                                          sequence."

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:

CGACACTC GAG CTG CTG GAT CCG AAG CTC TGC TAC TTG CTA AAG   44
         Glu Leu Leu Asp Pro Lys Leu Cys Tyr Leu Leu Lys
         1   5   10

(2) INFORMATION FOR SEQ ID NO:30:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 12 amino acids
            (B) TYPE: amino acid
            (D) TOPOLOGY: linear

       (ii) MOLECULE TYPE: protein

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

Glu Leu Leu Asp Pro Lys Leu Cys Tyr Leu Leu Lys
1   5   10

(2) INFORMATION FOR SEQ ID NO:31:

        (i) SEQUENCE CHARACTERISTICS:

(A) LE●⊥.: 31 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(ix) FEATURE:
(A) NAME/KEY: misc_feature
(B) LOCATION: 6..11
(D) OTHER INFORMATION: /note= "Xho I restriction site."

(ix) FEATURE:
(A) NAME/KEY: misc_feature
(B) LOCATION: 12..31
(D) OTHER INFORMATION: /note= "Region of homology with
                                target sequence."

(ix) FEATURE:
(A) NAME/KEY: CDS
(B) LOCATION: 9..31

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:

CGACACTC GAG ACA ACA GAG TAC CAG GTA GC
        Glu Thr Thr Glu Tyr Gln Val Ala
         1   5

(2) INFORMATION FOR SEQ ID NO:32:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 8 amino acids
        (B) TYPE: amino acid
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: protein

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:

Glu Thr Thr Glu Tyr Gln Val Ala
 1   5

(2) INFORMATION FOR SEQ ID NO:33:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 28 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

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          (ii)  MOLECUL    .PE: cDNA

          (ix)  FEATURE:
                (A) NAME/KEY: misc_feature
                (B) LOCATION: 6..11
                (D) OTHER INFORMATION: /note= "Xho I restriction site."

          (ix)  FEATURE:
                (A) NAME/KEY: misc_feature
                (B) LOCATION: 12..28
                (D) OTHER INFORMATION: /note= "Region of homology with
                                             target sequence."

          (ix)  FEATURE:
                (A) NAME/KEY: CDS
                (B) LOCATION: 9..28


          (xi)  SEQUENCE DESCRIPTION: SEQ ID NO:33:

     CGACACTC GAG GGC GTG CAG GTG GAG AC                                  28
             Glu Gly Val Gln Val Glu Thr
             1               5



     (2)  INFORMATION FOR SEQ ID NO:34:

          (i)  SEQUENCE CHARACTERISTICS:
                (A) LENGTH: 7 amino acids
                (B) TYPE: amino acid
                (D) TOPOLOGY: linear

          (ii)  MOLECULE TYPE: protein

          (xi)  SEQUENCE DESCRIPTION: SEQ ID NO:34:

     Glu Gly Val Gln Val Glu Thr
     1               5

     (2)  INFORMATION FOR SEQ ID NO:35:

          (i)  SEQUENCE CHARACTERISTICS:
                (A) LENGTH: 27 base pairs
                (B) TYPE: nucleic acid
                (C) STRANDEDNESS: single
                (D) TOPOLOGY: linear

          (ii)  MOLECULE TYPE: cDNA

          (ix)  FEATURE:
                (A) NAME/KEY: misc_feature
                (B) LOCATION: 6..11
                (D) OTHER INFORMATION: /note= "Sal I restriction site."
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(ix) FEATURE
    (A) NAME/KEY: misc_feature
    (B) LOCATION: 12..27
    (D) OTHER INFORMATION: /note= "Region of homology with
                          target sequence."

(ix) FEATURE:
    (A) NAME/KEY: CDS
    (B) LOCATION: complement (9..26)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:

CGACAGTCGA CTTCCAGTTT TAGAAGC

(2) INFORMATION FOR SEQ ID NO:36:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 6 amino acids
        (B) TYPE: amino acid
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: protein

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:36:

Leu Leu Lys Leu Glu Val
1   5

(2) INFORMATION FOR SEQ ID NO:37:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 27 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: cDNA

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION: 7..12
        (D) OTHER INFORMATION: /note= "Xho I restriction site."

    (ix) FEATURE:
        (A) NAME/KEY: CDS
        (B) LOCATION: 10..27

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION: 13..27

(D) OTHER INFORMATION: /note= "Regi __ homology with target sequence."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:37:

```
TCGACACTC GAG ACG GGG GCC GAG GGC
          Glu Thr Gly Ala Glu Gly
          1                   5
```

(2) INFORMATION FOR SEQ ID NO:38:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 6 amino acids
        (B) TYPE: amino acid
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: protein

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:38:

```
Glu Thr Gly Ala Glu Gly
1                   5
```

(2) INFORMATION FOR SEQ ID NO:39:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 28 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: cDNA

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION: 7..12
        (D) OTHER INFORMATION: /note= "Sal I restriction site."

    (ix) FEATURE:
        (A) NAME/KEY: CDS
        (B) LOCATION: complement (10..18)

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION: 13..28
        (D) OTHER INFORMATION: /note= "Region of homology with target sequence."

(xi) SEQUENC ᴅSCRIPTION: SEQ ID NO:39:

CCGACAGTCG ACCTCTATTT TGAGCAGC   28

(2) INFORMATION FOR SEQ ID NO:40:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 3 amino acids
            (B) TYPE: amino acid
            (D) TOPOLOGY: linear

       (ii) MOLECULE TYPE: protein

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:40:

Ile Glu Val
 1

(2) INFORMATION FOR SEQ ID NO:41:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 38 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear

       (ii) MOLECULE TYPE: cDNA

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:41:

CGACACCGCG GCCACCATGA AGCTACTGTC TTCTATCG   38

(2) INFORMATION FOR SEQ ID NO:42:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 28 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear

       (ii) MOLECULE TYPE: cDNA

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:42:

CGACAGTCGA CCGATACAGT CAACTGTC   28

(2) INFORMATION FOR SEQ ID NO:43:

(i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 38 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear

       (ii) MOLECULE TYPE: cDNA

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION: 6..11
            (D) OTHER INFORMATION: /note= "Sac II restriction site."

       (ix) FEATURE:
            (A) NAME/KEY: misc_signal
            (B) LOCATION: 12..16
            (D) OTHER INFORMATION: /note= "Kozak sequence."

       (ix) FEATURE:
            (A) NAME/KEY: CDS
            (B) LOCATION: 17..37

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION: 17..38
            (D) OTHER INFORMATION: /note= "Gal4 (1-147) coding region."

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:43:

CGACACCGCG GCCACC ATG AAG CTA CTG TCT TCT ATC G   38
                  Met Lys Leu Leu Ser Ser Ile
                   1   5

 (2) INFORMATION FOR SEQ ID NO:44:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 7 amino acids
            (B) TYPE: amino acid
            (D) TOPOLOGY: linear

       (ii) MOLECULE TYPE: protein

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:44:

Met Lys Leu Leu Ser Ser Ile
 1   5

 (2) INFORMATION FOR SEQ ID NO:45:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 28 base pairs
            (B) TYPE: nucleic acid

(C) STR⬤EDNESS: double
            (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: cDNA

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION: 1..17
            (D) OTHER INFORMATION: /note= "Region encoding for C-terminal end
                                          of Gal4 (1-147)."

    (ix) FEATURE:
            (A) NAME/KEY: CDS
            (B) LOCATION: 3..17

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION: 18..23
            (D) OTHER INFORMATION: /note= "Sal I restriction site."

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:45:

GA CAG TTG ACT GTA TCG GTCGACTGTC G   28
   Arg Gln Leu Thr Val Ser
   1   5

(2) INFORMATION FOR SEQ ID NO:46:

        (i) SEQUENCE CHARACTERISTICS:
                (A) LENGTH: 6 amino acids
                (B) TYPE: amino acid
                (D) TOPOLOGY: linear

        (ii) MOLECULE TYPE: protein

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:46:

Arg Gln Leu Thr Val Ser
1   5

(2) INFORMATION FOR SEQ ID NO:47:

        (i) SEQUENCE CHARACTERISTICS:
                (A) LENGTH: 34 base pairs
                (B) TYPE: nucleic acid
                (C) STRANDEDNESS: single
                (D) TOPOLOGY: linear

        (ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:47:

CGACACCGCG GCCACCATGG TTTCTAAGCT GAGC

(2) INFORMATION FOR SEQ ID NO:48:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 28 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: cDNA

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:48:

CGACAGTCGA CCAACTTGTG CCGGAAGG

(2) INFORMATION FOR SEQ ID NO:49:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 34 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: cDNA

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION: 6..11
        (D) OTHER INFORMATION: /note= "Sac II restriction site."

    (ix) FEATURE:
        (A) NAME/KEY: misc_signal
        (B) LOCATION: 12..16
        (D) OTHER INFORMATION: /note= "Kozak sequence."

    (ix) FEATURE:
        (A) NAME/KEY: CDS
        (B) LOCATION: 17..34

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION: 17..34
        (D) OTHER INFORMATION: /note= "Region encoding N-terminal
            end of HNF1 (1281)."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:49:

```
CGACACCGCG GCCACC ATG GTT TCT AAG CTG AGC
                  Met Val Ser Lys Leu Ser
                   1               5
```

(2) INFORMATION FOR SEQ ID NO:50:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 6 amino acids
        (B) TYPE: amino acid
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: protein

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:50:

```
Met Val Ser Lys Leu Ser
 1               5
```

(2) INFORMATION FOR SEQ ID NO:51:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 28 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: cDNA

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION: 1..20
        (D) OTHER INFORMATION: /note= "Region encoding for C-terminal end
                               of HNF1 (1-282)."

    (ix) FEATURE:
        (A) NAME/KEY: CDS
        (B) LOCATION: 3..17

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:51:

```
CC TTC CGG CAC AAG TTG GTCGACTGTC G                          28
Ala Phe Arg His Lys Leu
 1               5
```

(2) INFORMATION FOR SEQ ID NO:52:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 6 amino acids

(B)   E: amino acid
             (D) TOPOLOGY: linear

        (ii) MOLECULE TYPE: protein

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:52:

Ala Phe Arg His Lys Leu
 1   5

(2) INFORMATION FOR SEQ ID NO:53:

        (i) SEQUENCE CHARACTERISTICS:
             (A) LENGTH: 11 base pairs
             (B) TYPE: nucleic acid
             (C) STRANDEDNESS: both
             (D) TOPOLOGY: linear

        (ii) MOLECULE TYPE: cDNA

        (ix) FEATURE:
             (A) NAME/KEY: misc_signal
             (B) LOCATION: 3..7
             (D) OTHER INFORMATION: /note= "Kozak sequence."

        (ix) FEATURE:
             (A) NAME/KEY: misc_feature
             (B) LOCATION: 1..11
             (D) OTHER INFORMATION: /note= "Complementary to bases 5 to
                 15 of SEQ ID NO:54."

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:53:

                                                                        11
GGCCACCATG C

(2) INFORMATION FOR SEQ ID NO:54:

        (i) SEQUENCE CHARACTERISTICS:
             (A) LENGTH: 3 amino acids
             (B) TYPE: amino acid
             (C) STRANDEDNESS: single
             (D) TOPOLOGY: linear

        (ix) FEATURE:
             (A) NAME/KEY: Peptide
             (B) LOCATION: 1..3
             (D) OTHER INFORMATION: /note= "Translation product of SEQ
                                    ID NO:53 and SEQ ID NO:55. Translational
                                    start site at base 8 of SEQ ID NO:53."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:54:

Met Leu Glu
1

(2) INFORMATION FOR SEQ ID NO:55:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 17 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: both
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: cDNA

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION: 14..17
        (D) OTHER INFORMATION: /note= "Sac II restriction site overhang."

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION: 1..5
        (D) OTHER INFORMATION: /note= "Xho I restriction site overhang."

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION: 5..15
        (D) OTHER INFORMATION: /note= "Complementary to bases 1 to 11 of
                        SEQ ID NO:53."

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:55:

TCGAGCATGG TGGCCGC   17

(2) INFORMATION FOR SEQ ID NO:56:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 27 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: cDNA

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:56:

TCGACCCTAA GAMGAAGAGA AAGGTAC   27

(2) INFORMATION FOR SEQ ID NO:57:

(i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 27 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: cDNA

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:57:

TCGAGTACCT TTCTCTTCKT CTTAGGG   27

(2) INFORMATION FOR SEQ ID NO:58:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 27 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: both
            (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: cDNA

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION: 1..5
            (D) OTHER INFORMATION: /note= "Sal I restriction site overhang."

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION: 5..27
            (D) OTHER INFORMATION: /note= "Complementary to SEQ ID NO:60,
                                 bases 5 to 27."

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:58:

TCGACCCTAA GAAGAAGAGA AAGGTAC   27

(2) INFORMATION FOR SEQ ID NO:59:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 11 amino acids
            (B) TYPE: amino acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear

    (ix) FEATURE:
            (A) NAME/KEY: Peptide
            (B) LOCATION: 1..11
            (D) OTHER INFORMATION: /note= "Translation product of SEQ ID

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:59:

Leu Asp Pro Lys Lys Lys Arg Lys Val Leu Glu
1   5   10

(2) INFORMATION FOR SEQ ID NO:60:

     (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 27 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: both
          (D) TOPOLOGY: linear

     (ii) MOLECULE TYPE: cDNA

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION: 1..5
          (D) OTHER INFORMATION: /note= "Xho I restriction site overhang."

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION: 5..27
          (D) OTHER INFORMATION: /note= "Complementary to SEQ ID NO:58,
                                      bases 5 to 27."

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:60:

TCGAGTACCT TTCTCTTCTT CTTAGGG   27

(2) INFORMATION FOR SEQ ID NO:61:

     (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 29 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

     (ii) MOLECULE TYPE: cDNA

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:61:

CGACAGTCGA CGCCCCCCCG ACCGATGTC   29

(2) INFORMATION FOR SEQ ID NO:62:

(i) SEQUENCE CHARACTERISTICS:
    (A) LENGTH: 26 base pairs
    (B) TYPE: nucleic acid
    (C) STRANDEDNESS: single
    (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:62:

CGACACTCGA GCCCACCGTA CTCGTC   26

(2) INFORMATION FOR SEQ ID NO:63:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 29 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: cDNA

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION: 6..11
        (D) OTHER INFORMATION: /note= "Sal I restriction site."

    (ix) FEATURE:
        (A) NAME/KEY: CDS
        (B) LOCATION: 12..29

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION: 12..29
        (D) OTHER INFORMATION: /note= "Region encoding Nterminal
  end of VP16 (413490)."

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:63:

CGACAGTCGA C GCC CCC CCG ACC GAT GTC   29
          Ala Pro Pro Thr Asp Val
        1   5

(2) INFORMATION FOR SEQ ID NO:64:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 6 amino acids
        (B) TYPE: amino acid
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:64

Ala Pro Pro Thr Asp Val
1   5

(2) INFORMATION FOR SEQ ID NO:65:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 26 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: cDNA

    (ix) FEATURE:
        (A) NAME/KEY: CDS
        (B) LOCATION: 1..15

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION: 1..15
        (D) OTHER INFORMATION: /note= "Region encoding C-terminal
        end of VP16 (413-490)."

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:65:

GAC GAG TAC GGT GGG CTCGAGTGTC G   26
Asp Glu Tyr Gly Gly
1   5

(2) INFORMATION FOR SEQ ID NO:66:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 5 amino acids
        (B) TYPE: amino acid
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: protein

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:66:

Asp Glu Tyr Gly Gly
1   5

(2) INFORMATION FOR SEQ ID NO:67:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 23 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single

(D) TOPOLOGY: linear

      (ii) MOLECULE TYPE: cDNA

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:67:

GGAATTCCAT ATGGGCGTGC AGG   23

(2) INFORMATION FOR SEQ ID NO:68:

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 5 amino acids
          (B) TYPE: amino acid
          (D) TOPOLOGY: linear

      (ii) MOLECULE TYPE: peptide

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:68:

His Met Gly Val Gln
1   5

(2) INFORMATION FOR SEQ ID NO:69:

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 39 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

      (ii) MOLECULE TYPE: cDNA

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:69:

CTGTCCCGGG ANNNNNNNNN TTTCTTTCCA TCTTCAAGC   39

(2) INFORMATION FOR SEQ ID NO:70:

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 11 amino acids
          (B) TYPE: amino acid
          (D) TOPOLOGY: linear

      (ii) MOLECULE TYPE: peptide

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:70:

Arg Ser Xaa Xaa Xaa Lys Lys Gly Asp Glu Leu
1   5   10

(2) INFORMATION FOR SEQ ID NO:71:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 64 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear

        (ii) MOLECULE TYPE: cDNA

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:71:

CTGTCCCGGG AGGAATCAAA TTTCTTTCCA TCTTCAAGCA TNNNNNNNNN GTGCACCACG   60

CAGG

(2) INFORMATION FOR SEQ ID NO:72:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 19 amino acids
            (B) TYPE: amino acid
            (D) TOPOLOGY: linear

        (ii) MOLECULE TYPE: peptide

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:72:

Arg Ser Ser Asp Phe Lys Lys Gly Asp Glu Leu Met Xaa Xaa Xaa His
1   5   10   15

Val Val Cys

(2) INFORMATION FOR SEQ ID NO:73:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 57 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear

        (ii) MOLECULE TYPE: cDNA

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:73:

CGCGGATCCT CATTCCAGTT TTAGAAGCTC CACATCNNNN NNNNNAGTGG CATGTGG   57

(2) INFORMATION FOR SEQ ID NO:74:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 15 amino acids
            (B) TYPE: amino acid

(D)   POLOGY: linear

     (ii) MOLECULE TYPE: peptide

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:74:

Glu Leu Lys Leu Leu Glu Val Asp Xaa Xaa Xaa Thr Ala His Pro
 1   5   10   15

(2) INFORMATION FOR SEQ ID NO:75:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 28 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear

        (ii)   MOLECULE TYPE: cDNA

        (xi)   SEQUENCE DESCRIPTION: SEQ ID NO:75:

CGCGGATCCT CATTCCAGTT TTAGAAGC   28

(2) INFORMATION FOR SEQ ID NO:76:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 5 amino acids
            (B) TYPE: amino acid
            (D) TOPOLOGY: linear

        (ii) MOLECULE TYPE: peptide

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:76:

Glu Leu Lys Leu Leu
 1   5

(2) INFORMATION FOR SEQ ID NO:77:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 28 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear

        (ii)   MOLECULE TYPE: cDNA

        (xi)   SEQUENCE DESCRIPTION: SEQ ID NO:77:

CGACAGTCGA CCGATACAGT CAACTGTC   28

(2) INFORMATION FOR SEQ ID NO:78:

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 28 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

     (ii) MOLECULE TYPE: cDNA

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:78:

CGACAGTCGA CCAACTTGTG CCGGAAGG   28

(2) INFORMATION FOR SEQ ID NO:79:

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 17 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

     (ii) MOLECULE TYPE: cDNA

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:79:

TCGAGCATGG TGGCCGC   17

(2) INFORMATION FOR SEQ ID NO:80:

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 27 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

     (ii) MOLECULE TYPE: cDNA

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:80:

TCGAGTACCT TTCTCTTCTT CTTAGGG   27

(2) INFORMATION FOR SEQ ID NO:81:

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 26 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

     (ii) MOLECULE TYPE: cDNA

(xi)   SEQUENCE DESCRIPTION: SEQ ID NO

CGACACTCGA GCCCACCGTA CTCGTC   26